



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:
Socio-ecological transitions and bio-cultural shifts”

The Consequence of Agroforestry in Genetic Diversity of Oak Forests of West of Iran

Soudabeh Ali Ahmad Korori¹, Elaheh Madani Mashaei¹, Seyedmahmoud Monemian²

¹Technology of Natural Sustainable Ecosystem Research Group (TONSERG), Iran

²University of Bremen, Fac. of Ecology, Germany

Abstract

In the past decade, oak mortality in the Zagros oak forests (western Iran) have been reported repeatedly. Many hypotheses for the decline of the Persian Oak (*Quercus persica*) have been presented, amongst it its genetic extinction. Agroforestry systems are one of the prevalent management systems in these natural forests. The goal of this paper was to investigate the impact of agroforestry on the natural oak forests of Ilam province, especially with regard to the intraspecies genetic diversity; as this was identified as a possible cause of oak decline. The study sites were located in the Zagros region, Ilam province, West Iran, bordering Iraq. Three study sites were chosen randomly in similar ecological conditions, to provide an assessment of the effect of the agroforestry management system on the genetic diversity of Oak trees. The first site was located in a 22-year old protected forest area (control site), the second site was located in a forest under moderate agroforestry management and the third one was located in an area under agroforestry management only. In each site, leaf samples were taken from 15 stands. Additionally, in the surrounding area of each site, leaves from 25 individual stands were sampled as a control in order to consider genetic diversity. Therefore, in total 70 individual stands were selected for molecular investigation. The genetic diversity of the samples was evaluated using microsatellite molecular markers (SSR method). According to the results of molecular studies, the minimum number of the polymorphic loci (24) was observed for the third site (highest rate of agroforestry), and the maximum number of the polymorphic loci (27) was observed for the first site (undisturbed protected area). Moreover, site 2 showed 26 polymorphic loci. The results also revealed a high intra-species diversity (31 polymorphic loci in total). Therefore, it can be concluded that an inappropriate agroforestry management in these natural oak forests might lead to a strong decrease of the intra-species diversity.

Keywords: Genetic diversity, intra-species diversity, Persian oak, Zagros